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#12 5-29-03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Oh et al
Serial No.: 09/483,569
Filed: January 14, 2000
For: SIMPLIFIED NOISE SUPPRESSION CIRCUIT

Art Unit: 2654
Examiner: Talivaldis Smits
Docket: TI-23373

Reply Brief under 37 C.F.R. §1.193(b)

Assistant Commissioner
for Patents
Washington, D.C. 20231

CERTIFICATION OF FAX TRANSMITTAL UNDER 37 C.F.R. §1.6(b)

I hereby certify that the above correspondence is being facsimile transmitted to the Patent and Trademark Office on May 27, 2003.

Robin E. Barnum

Dear Sir:

This is Applicant's Reply Brief filed pursuant to 37 C.F.R. §1.193(b) in response to new grounds of rejection and new points of argument set forth in the EXAMINER'S ANSWER of May 7, 2003.

Arguments

Group I

The EXAMINER'S ANSWER states at page 5, line 15 to page 6, line 5:

> "Applicants argue that 'Bloebaum et al. teaches smoothing of the vector N from noise model adaption block 46 as a function of the prior noise vector N and the vector S. This is not smoothing the power estimate as claimed.' (Appeal Brief, p. 4) The examiner disagrees, and asserts that Bloebaum et al. teach *both* signal power smoothing (variance

> reduction, Fig. 5, element 64 with col. 8, lines 6-8) as well as said noise power smoothing, noting that the Voice Activity Detector (Fig. 3, element 28, whose flag indicated whether there is signal or only noise coming out of the sampler, element 26 and being input to the 'Noise Model Adaption' processor (element 46)) helps said adaption processor distinguish and do separate bookkeeping on signal power and noise power data, so that the 'N' output therefrom would be smoothed signal of smoothed noise, depending on the VAD flag (note the signal S input thereto)."

This **Response to Argument** cites portions of Bloebaum et al not previously cited by the Examiner. Thus this represents a new argument first presented in the EXAMINER'S ANSWER.

The Applicants respectfully submit that Bloebaum et al does not teach signal power smoothing when voice activity detector 28 determines the presence of speech. Bloebaum et al states at column 4, lines 34 to 40:

> "A noise model adapter function 34 updates a noise model vector N using the estimated power spectrum of the current frame, if the vadFlag indicates that there is an absence of speech. The noise model adapter 34 computes a spectral enhancement filter from the updated noise model vector N and the estimated power spectrum of the current frame."

Bloebaum et al further states at column 5, lines 27 to 30:

> "The noise model is stored by the noise model adaptation block 46 and is updated when the vadFlag is set to zero, indicating that there is an absence of speech."

While Bloebaum et al teaches action while the vadFlag indicates the absence of speech, it fails to teach any action by noise model adapter function 34 or noise model adaption block 46 when the vadFlag indicates the presence of speech. The structures are given the names "noise model adapter function 34" and "noise model adaptation block 46" emphasizing their operation in noise modeling. Since Bloebaum et al teaches noise model adaption block 46 updates a noise model in the absence of speech and fails to teach any

action in the presence of speech, one skilled in the art would understand that this block is inactive in the presence of speech. Thus Bloebaum et al does not teach signal power smoothing in the presence of speech and "separate bookkeeping" as urged by the Examiner. Accordingly, the claims are allowable over Bloebaum et al.

The variance reduction block 64 illustrated in Figure 5 of Bloebaum et al also fails to teach "smoothing the power estimate over time" as recited in claims 1 and 9. Bloebaum et al states at column 8, lines 6 to 8:

> "In FIG. 5, the signal model vector S is input to the Variance Reduction block 64, which outputs a smoothed version of S denoted S^."

This language and the inputs to variance reduction block 64 are similar to variance reduction block 58 illustrated in Figure 4. Bloebaum et al states at column 5, lines 60 to 62:

> "The Variance Reduction block receives as input $|S(e^{j\omega})|^2$ and applies a smoothing function in the frequency domain to generate an output $|\hat{S}(e^{j\omega})|^2$."

Bloebaum et al teaches at column 7, line 65 to column 8, line 2 that transform and filter computation block 62 illustrated in Figure 5 is an alternative to the transformation and filter computation block 56 illustrated in Figure 4. By analogy the variance reduction block 64 newly cited in the EXAMINER'S ANSWER likewise "applies a smoothing function in the frequency domain" as taught for variance reduction block 58. Thus this portion of Bloebaum et al fails to make obvious "smoothing the power estimate over time" as recited in claims 1 and 9. Accordingly, the current claims are allowable over Bloebaum et al.

In view of the foregoing arguments, the Applicants respectfully submit that claims are allowable for the reasons set forth above. Accordingly, the Applicants respectfully request reversal of the final rejection and advance to issue.

If the Examiner has any questions or other correspondence regarding this application, Applicants request that the Examiner contact Applicants' attorney at the below listed telephone number and address to facilitate prosecution.

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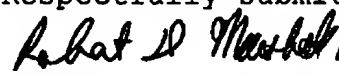
Respectfully submitted,



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of		TI-23373
	Stephen S. Oh, et al.	Art Unit: 2654
Serial No.:	09/483,569	Examiner: Talivaldis Smits
Filed:	January 14, 2000	Conf. No.: 8551
For:	Simplified Noise Suppression Circuit	

CERTIFICATION OF FACSIMILE TRANSMISSION

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Robin E. Barnum — May 27, 2003
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___	DIVISIONAL APP'N		

NAME OF INVENTOR(S): Stephen S. Oh, et al.	RECEIPT DATE & SERIAL NO.: **Serial No.: 09/483,569** **Filing Date:** January 14, 2000
TITLE OF INVENTION: Simplified Noise Suppression Circuit	
TI FILE NO.: **TI-23373** / DEPOSIT ACCT. NO.: **20-0668**	
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REPLY BRIEF TRANSMITTAL

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Robin E. Barnum

Dear Sir:

The following Reply Brief is respectfully submitted in connection with the above-identified application in response to the Appeal Brief mailed March 18, 2003, and the Examiner's Answer mailed May 7, 2003.

Respectfully submitted,

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